

## CLAIMS

1. A valve assembly, comprising:  
  
a replacement valve; and  
  
a collapsible and expandable anchoring structure,  
  
said anchoring structure being dimensioned to lodge inside a valve sinus.
2. The valve assembly of claim 54, wherein said anchoring structure comprises a plurality of elliptical segments joined side by side to form junctures.
3. The valve assembly of claim 55, wherein said junctures define longitudinal support post areas.
4. The valve assembly of claim 56, wherein said longitudinal support post areas are configured to coincide with the sinus commissural posts.
5. The valve assembly of claim 55, wherein said elliptical segments flare outwardly at the inflow and outflow ends.
6. The valve assembly of claim 55, wherein said elliptical segments are joined by a double crimp.
7. The valve assembly of claim 54, wherein said elliptical segment anchoring structure is made of a material with a high modulus of elasticity.
8. The valve assembly of claim 55, wherein the outflow ends of said elliptical segments are removed and the distal ends of the junctures between elliptical segments are formed into prongs.
9. The valve assembly of claim 54, wherein said elliptical segment anchoring structure is made from one piece of tubing.
10. The valve assembly of claim 61, wherein said elliptical segment anchoring structure comprises a plurality of support posts.

11. The valve assembly of claim 62, wherein said support posts comprise axial slots oriented toward the outflow end.

12. The valve assembly of claim 63, wherein said support posts comprise a plurality of suture bores.

13. The valve assembly of claim 62, wherein said support posts are configured to coincide longitudinally with the sinus commissural posts.